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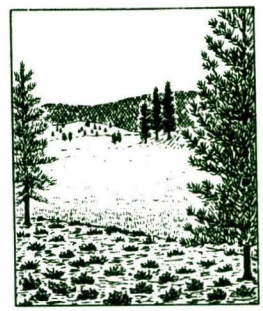

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ETHYLENE DIBROMIDE EMULSION SPRAY FOR CONTROL OF THE MOUNTAIN PINE BEETLE IN LODGEPOLE PINE

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A water emulsion spray of ethylene dibromide has been found effective for control of the mountain pine beetle in lodgepole pine. This spray was developed for use against the Engelmann spruce beetle in Colorado[1/] and can probably be used against most bark-beetle species in thin-barked trees. For thick-barked trees, an oil spray of ethylene dibromide is used.[2/]

Spraying is the preferred control method when fire danger is high, and an emulsion is often preferable to an oil spray. The main advantage of the emulsion spray is that 80 percent of its volume is water, which can usually be obtained in the woods close to the treating site. Therefore, much less material has to be carried into the woods, and transportation costs are often materially reduced. An additional benefit is that emulsions are less disagreeable to work with than oil sprays.

The spray consists of water and fuel oil, to which an emulsifier has been added so the two will mix, and the insecticide--liquid 85 percent ethylene dibromide.

1/ Massey, C. L., Chisholm, R. D., and Wygant, N. D. 1953. Chemical control of the Engelmann spruce beetle in Colorado. Econ. Ent. 46(6):951-955.

2/ Downing, G. L. 1954. Ethylene dibromide sprays for controlling bark beetles in California. Misc. Paper No. 17, Calif. Forest and Range Expt. Sta. 2 pp.

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Equipment and Materials

Aside from saws, axes, peavies, etc., necessary for handling the trees, the following equipment and materials are needed, in quantities depending on the size of the job:

1. Fifty-five gallon drums, for mixing emulsifiable concentrate.

2. Five-gallon cans, for transporting concentrate and finished spray.

3. Gallon cans with handles and spouts, for measuring emulsifiers, insecticide, and concentrate.

4. Garden-type sprinkling cans, for applying the spray. Under some circumstances, power spraying equipment such as a Bean slip-on unit may be useful. Care must be taken to use low pressures, however, to avoid bouncing spray off the logs and creating a mist, which usually drifts away.

5. Ethylene dibromide (85 percent).

6. Emulsifier (Triton X-100 and Triton B-1956).

7. Diesel oil.

Procedure

Treating consists of three steps: Preparing the trees, preparing the spray, and spraying.

Preparing the trees.--Fall and limb the tree, and buck the infested part of the trunk into lengths that can be rolled.

Preparing the spray.--This involves two main steps--preparing the emulsifiable concentrate at the base camp, and mixing it with water, usually at the treating area. The concentrate consists of ethylene dibromide, fuel oil, and an emulsifier. For the emulsifier, mix 3 parts Triton X-100 with 5 parts Triton B-1956. Then mix 3 parts of the emulsifier with 5 parts 85 percent ethylene dibromide and 24 parts diesel oil. This is the material taken into the woods. At the treating area, mix 1 part of the concentrate with 4 parts of water. Pour the concentrate in first, and make sure the finished spray is well mixed.

Spraying.--Using a sprinkling can, drench the top of each log until the spray just begins to run off. Let it soak into the bark, then roll the log so that an untreated area is on top, and repeat. Continue until the entire bark surface has been covered--this usually requires 2 or 3 turns of the log. Do not treat when the bark is wet. Be sure to get total coverage--beetles under untreated bark will not be killed.

An average of about 8 gallons of finished spray will be needed to treat a lodgepole pine 36 inches in diameter at breast height. At current prices, the spray will cost about $0.27 per gallon.

Sources of Supply

Ethylene dibromide (85 percent) can be obtained from most agricultural chemical suppliers. Triton X-100 and Triton B-1956 are available from Rohm and Haas Co., 600 California Street, San Francisco, Calif.

CAUTION: Ethylene dibromide and diesel oil are skin irritants. Any material spilled on the skin or clothing should be washed off immediately with soap and water. The concentrate has the flammability of diesel oil and the usual precautions should be observed when handling it. Avoid breathing the fumes of ethylene dibromide.

Note: In order that the information in our publications may be more intelligible, it is sometimes necessary to use trade names of products or equipment rather than complicated descriptive or chemical identifications. In so doing it is unavoidable in some cases that similar products which are on the market under other trade names may not be cited. No endorsement of named products is intended, nor is criticism implied of similar products which are not mentioned.